

U.S. Serial No. 10/053,182 (Attorney Dkt: HALB:031)
Art Unit: 3673; Examiner KRECK, JOHN J.

REMARKS

Interview Summary

Applicant acknowledges with appreciation the time the Examiner spent with the undersigned on December 15, 2004 in explaining his rejections of Applicant's claims and the Examiner's follow-up Interview Summary indicating the evidence that Applicant would need to provide to satisfy the Examiner that Applicant's invention demonstrates unexpected results.

Generally the Examiner advised that Applicant would need to show greater results than an additive effect in the use of DIAMOND SEAL™ and STEELSEAL™. The Examiner admitted that the tests shown in Applicant's specification showed that the combination of the two claimed agents result in greater effectiveness than either of the agents alone. However, he advised that it was not clear that the result of the combination was greater than one would expect merely from additive effects. "For example," the Examiner advised:

"Table 1 shows that combinations of STEELSEAL™ and DIAMOND SEAL™ totaling 80ppb (with 2000 ppm glyoxal) are more effective than 80 ppb of STEELSEAL™ alone (without glyoxal); and that those combinations are more effective than 10 ppb of DIAMOND SEAL™ alone (without glyoxal). The evidence fails to show how the combinations compare to greater concentrations of DIAMOND SEAL™ (c.g., 80 ppb) or STEELSEAL™ or DIAMOND SEAL™ with added glyoxal."

The undersigned understood at the conclusion of the interview that the Examiner would require additional test data from Applicant to support Applicant's claim of a synergistic blend.

Claim Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 14-19, 21-24 under 35 U.S.C. 103(a) as unpatentable over Zaleski et al (U.S. Patent No. 5,826,669) in view of Diamond Seal™. Applicant respectfully traverses these rejections for the reasons discussed below.

Specifically, the Examiner has stated that Zaleski teaches treating a wellbore with a fluid including a carbon based material to prevent or alleviate lost circulation but that Zaleski fails to teach the polymer. However, the Examiner has stated that Diamond Seal™ is a water swellable but not water soluble crystalline synthetic polymer disclosed as useful in preventing lost circulation. In the Examiner's view, "It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Zaleski process to have included a water

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swellable but not water soluble crystalline synthetic polymer as called for in claim 14" or in claim 15 or in claim 18. "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose," the Examiner states, citing *In re Kerkhoven*.

In response to Applicant's arguments traversing this position by the Examiner in the first office action, the Examiner states with reference to Applicant's specification:

[T]he table lacks sufficient data to fully evaluate any assertion of unexpected results (e.g. no control values without either Diamondseal™ or Steelseal™ ***that is , no test with neither Diamondseal™ or Steelseal™***) and there is no evidence that any synergistic effect is greater than what would have been expected. Note for example, the test of 80 ppb Steelseal™ shows 50 ml filtrate; and the test with 10 ppb Diamondseal™ shows 59 ml filtrate. There is insufficient evidence to indicate whether the 78 ppb Steelseal™ and 2 ppb Diamondseal™ filtrate of 39 ml is "unexpected" or shows "surprising synergy" since the evidence fails to indicate what the filtrate would be without either Diamondseal™ or Steelseal™. One of ordinary skill in the art would have expected a decrease in filtrate with the combination of the two materials; simply by additive effect. "Superior performance" of the combination is not sufficient to rebut a prima facie case of obviousness.

In *In re Kerkhoven* cited by the Examiner, appellant's attorney admitted that appellant had not run any tests comparing his multi-slurry-produced detergent compositions containing a builder with the prior art single-slurry-produced detergent compositions containing the builder. Thus, it was said that appellant had failed to prove the superiority of his multi-slurry technique over the prior art's single-slurry technique for the production of detergent compositions containing this builder.

The Federal Circuit has advised that, "One way for a patent applicant to rebut a prima facie case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected. . . . Consistent with the rule that all evidence of nonobviousness must be considered when assessing patentability, the PTO must consider comparative data in the specification in determining whether the claimed invention provided unexpected results. . . . Given a presumption of similar properties for similar compositions, substantially improved properties are ipso facto unexpected." *In re Soni*, 54 F.3d 746, 750-51, 34 U.S.P.Q.2d 1684 (Fed. Cir. 1995) (emphasis added).

In the application currently before the Examiner, Applicant provided test data in Table 1 showing the unexpected superiority of Applicant's combination. Applicant's invention shows

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surprisingly superior performance with the combination, and furthermore the superior effect of such combination without the need for adding other elements or materials such as silicate or bentonite for reinforcement as used in the prior art when the individual components of the combination were used separately, that is, one without the other. (See paragraph [0013] of Applicant's specification.).

Applicant respectfully submits that the effectiveness of the invention in preventing or alleviating lost circulation without reinforcing fibers or materials such as silicate or bentonite is itself "unexpected results" to one skilled in the art. In contrast, the Background section of Applicant's specification discusses the use of such reinforcing fibers or materials in relevant prior art lost circulation materials. The Zaleski patent cited by the Examiner, like the prior art discussed by Applicant, uses bentonite with the resilient graphitic carbon. Those skilled in the art readily appreciate the tremendous advantages of fewer additives, and especially the advantages of not having to include reinforcing fibers or materials such as silicate or bentonite, in a lost circulation material.

The Examiner has cited col.9, line 22 of Zaleski in support of his argument that Zaleski teaches the material used without reinforcing materials and without bentonite, in rejecting Applicant's claims 25 and 26. Applicant, however, respectfully responds that the Examiner has misconstrued the Zaleski teaching. In col. 9, at lines 21-26, Zaleski teaches that field tests were conducted to assess the efficacy of the graphitic carbon additive under actual conditions and the graphitic carbon additive was "used alone and in blends with mica, cellulose fiber or calcium carbonate. . . . In all cases the material was compatible with other lost circulation or seepage loss products." Thus the statement at col. 9, lines 25-26 after the one cited by the Examiner contradicts that the graphitic carbon additive was actually used "alone" as that term has been construed by the Examiner. Moreover, the additives in the blends were mica, cellulose fiber, or calcium carbonate with no mention of bentonite. When this portion of the Zaleski patent is read in light of the context of the overall patent, however, one understands that Zaleski assumes the use of bentonite in the fluid. See, for example, Tables 4 and 5 and the discussion related thereto.

However, even if (for the sake of argument only) the use of the graphitic carbon component of Applicant's combination without reinforcing additives and without bentonite were not novel, as argued by the Examiner, Applicant respectfully submits that Applicant's test data in Table I shows to one skilled in the art that the superior performance of Applicant's combination is significantly better than "additive" or expected. The test controls--all STEELSEAL™ and all

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DIAMOND SEAL™, one without the other, showed substantially higher filtrate indicating less lost circulation control than the blends of the invention. Adding the controls together, which separately allowed 50ml and 59ml of filtrate, one skilled in the art might expect a filtrate of somewhere between 50 ml and 59 ml, not filtrates of substantially less than 50 ml! The samples of the invention reduced the amount of filtrate down to as little as 10 ml and at the highest amount—39 ml—still an unexpectedly reduced amount when considered in light of the controls and the prior art.

In his Interview Summary, the Examiner advised that, “The evidence [of Table I] fails to show how the combinations compare to greater concentrations of DIAMOND SEAL™ (e.g. 80 ppb) or STEELSEAL™ or DIAMOND SEAL™ with added glyoxal.” However, the tests that the Examiner proposes are not ones that call for use of the products as taught in the prior art, nor are they ones that call for use of the products as claimed in Applicant’s invention. That is, the prior art does not teach use of DIAMOND SEAL™ in amounts as large as proposed by the Examiner and the prior art does not teach using glyoxal with STEELSEAL™ or glyoxal with DIAMOND SEAL™ for the purposes taught by Applicant. Applicant teaches that glyoxal may be added to the combination “to facilitate the combination of the components.” (See paragraph [0016] of Applicant’s specification.)

Applicant respectfully submits that the Examiner’s citation of the Christman reference for teaching “the use of alcohol in drilling fluid, to prevent freezing in cold climates” is misplaced. Applicant does not use glyoxal for this purpose, and in distinct contrast, Applicant teaches that “the composition of the invention is effective at high temperatures, particularly temperatures typically encountered at intermediate wellbore depths of less than about 15,000 feet. Such intermediate depths are where most lost circulation typically occurs, if at all, during drilling for the recovery of hydrocarbons.” (See paragraph [0016] of Applicant’s specification.) The Christman teaching of using glyoxal to prevent freezing is irrelevant to Applicant’s invention.

Applicant respectfully submits that the Examiner is mistaken in stating that “There is insufficient evidence to indicate whether the 78 ppb Steelseal™ and 2 ppb Diamondseal™ filtrate of 39 ml is “unexpected” or shows “surprising synergy” since the evidence fails to indicate what the filtrate would be without either Diamondseal™ or Steelseal™.” The first row in Table I shows use of the STEELSEAL™ component without the DIAMOND SEAL™ component. The last row in Table I shows use of the DIAMOND SEAL™ component without

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use of the STEELSEAL™ component. Applicant questions that any better control than this data could be provided.

Applicant does not believe that data showing "how the combinations compare to greater concentrations of DIAMOND SEAL™ (e.g. 80 ppb) or STEELSEAL™ or DIAMOND SEAL™ with added glyoxal" without either DIAMOND SEAL™ or STEELSEAL™ component" would be meaningful to Applicant's invention. However, Applicant is submitting herewith a Request for Continued Examination to afford Applicant more time to conduct such tests. Applicant has not been able to get the tests done to date because of the need to spend limited laboratory time and resources on matters more directly related to the invention and Applicant's business.

The Examiner has rejected claims 15 and 18 for similar reasons as his rejection of claims 14-19, and 21-26. Applicant respectfully traverses these rejections and restates by reference the reasons and arguments given above for traversing the Examiner's rejections of claims 14-19 and 21-26, since such reasons and arguments are applicable as well to claims 15 and 18.

With respect to claim 17, the Examiner has noted that the DIAMOND SEAL™ component includes polyacrylamide as called for in that claim. However, as indicated above, Applicant respectfully submits that this reference does not teach or suggest Applicant's synergistic combination with resilient carbon based material or the unexpected results that Applicant obtains with the combination.

With respect to claim 19, the Examiner has noted that while the DIAMOND SEAL™ document fails to disclose the crosslinked polymer, the polyacrylamide sold as DIAMOND SEAL™ is crosslinked. Even if this is the case, Applicant respectfully submits that neither this reference nor the commercial product teaches or suggests Applicant's synergistic combination with resilient carbon based material or the unexpected results that Applicant obtains with the combination.

With respect to claim 21, the Examiner has noted that "Official Notice is taken that the use of weighting material is well-known and near universal in drilling fluids, in order to achieve proper density." Thus, the Examiner has said it would have been obvious to one of ordinary skill in the art to have further modified the Zaleski process to have included weighting material as called for in claim 21. Applicant respectfully traverses the Examiner's rejection and respectfully submits that the Examiner's argument is misplaced. While weighting materials are well-known for use in drilling fluids for achieving proper density, the compatibility of and/or continued effectiveness of lost circulation materials for preventing or alleviating lost circulation in the

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presence of weighting materials is not certain. That Applicant's combination is compatible and still useful with weighting materials is an added property or characteristic that further distinguishes the combination from prior art lost circulation fluids and materials that are not so compatible or useful with weighting materials.

With respect to claim 22, the Examiner has stated that it would have been obvious to have further modified the Zaleski process to have the carbon based material ranging in amounts of 70-90 lb/bbl and polymer in amounts of about 2-10 lb/bbl through experimentation. The Examiner has added that Zaleski teaches about 30-120 lb/bbl and that Diamond Seal™ teaches about 1-2 lb/bbl or about 10-20 lb/bbl which the Examiner indicates overlaps the range claimed by Applicant. Applicant respectfully traverses this rejection. Claim 22 claims a preferred range of quantities of the components that achieve the synergistic effect or unexpected results of Applicant's invention. Since the combination is not taught or suggested by either Zaleski or the DIAMOND SEAL™ product sheet for synergistic results, the amounts of the components that achieve the synergistic results also is not taught or suggested by either reference.

With respect to claim 23, the Examiner has noted that while Zaleski fails to disclose whether the process is used in a vertical or horizontal or directional well, lost circulation is known to occur in horizontal or directional wells. Applicant respectfully traverses the Examiner's rejection and respectfully submits that the Examiner's argument is misplaced. While lost circulation is known to occur in horizontal or directional wells as well as in vertical wells, the effectiveness and utility of lost circulation materials in horizontal or directional wells does not necessarily follow because such lost circulation materials are effective and useful in vertical wells. Those skilled in the art readily appreciate the added problems of preventing or alleviating lost circulation in horizontal or directional wells. That Applicant's combination is still effective and still useful in horizontal or directional wells is an added property or characteristic that further distinguishes the combination from prior art lost circulation fluids that cannot be used in such wells.

With respect to claim 24, the Examiner has noted that while Zaleski fails to teach the temperature of the well, "Official Notice is taken that wells often have temperature of less than 200°F, and that such wells can experience lost circulation." Applicant respectfully traverses this rejection and respectfully submits that the Examiner's argument is misplaced. While wells often have temperatures of less than 200°C, all prior art lost circulation materials are not effective at that temperature range for preventing or alleviating lost circulation. That Applicant's

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combination is effective at that temperature range is an added property or characteristic that further distinguishes the combination from prior art lost circulation fluids and materials.

The Examiner has rejected claims 25 and 26 as already discussed above. Applicant respectfully traverses these rejections for the reasons discussed above. Further, Applicant has incorporated the element of claim 25 into claim 14 and has canceled claim 25 to avoid redundancy. Applicant respectfully submits that claim 26 should further be allowable as a dependent claim based on an allowable independent claim, allowable for the reasons that Applicant has previously argued herein.

The Examiner has rejected claim 20 under 35 U.S.C. 103(a) as being unpatentable over Zaleski and DIAMOND SEAL™ as applied to claim 18 above and further in view of Christman (U.S. Patent No. 3,633,689). Specifically, the Examiner admits that Zaleski and DIAMOND SEAL™ fail to teach the alcohol, but the Examiner states that "Christman teaches the use of alcohol in drilling fluid, to prevent freezing in cold climates." The Examiner then concludes that "It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the Zaleski process to have included alcohol, in order to prevent freezing."

Applicant respectfully traverses this rejection of claim 20. As discussed above, Christman teaches glyoxal to prevent freezing of drilling fluids for operation in subfreezing environments and is not concerned with lost circulation materials. Applicant teaches use of glyoxal in paragraph 16 on page 6 "to facilitate the combination of the components." Applicant further states in this paragraph 16 that, "Moreover, the data shows the composition of the invention is effective at high temperatures, particularly temperatures typically encountered at intermediate wellbore depths of less than about 15,000 feet. Such intermediate depths are where most lost circulation typically occurs, if at all, during drilling for the recovery of hydrocarbons." As previously noted, the Christman teaching of using glyoxal to prevent freezing is irrelevant to Applicant's invention. The Federal Circuit has advised that when prior art references require selective combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight obtained from the invention itself. It is critical to understand the particular results achieved by the new invention. *Id.*

Applicant respectfully submits that the Examiner has presented no line of reasoning as to why an artisan reviewing only the collective teachings of the references cited by the Examiner would have found it obvious to selectively pick and choose various elements and/or concepts from the several references relied on to arrive at the claimed invention. Applicant respectfully

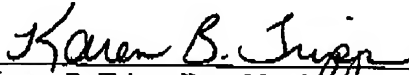
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submits that the Examiner has done little more than cite references to show that one or more elements is known. The claimed invention, however, is directed to a synergistic combination of elements to achieve unexpectedly superior results. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). None of the references teach increasing the effectiveness, efficiency or utility of using resilient carbon-based material and a water swellable but not water-soluble crystalline synthetic polymer for treating lost circulation as taught by Applicant.

Applicant respectfully requests the Examiner reconsider his position and Applicant's claims, as amended. Applicant respectfully submits that this response is fully responsive to the Examiner's office action and Applicant respectfully requests the Examiner to allow the application to proceed to issue.

Respectfully submitted,

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